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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,550	01/18/2002	Rodney M. Goodman	018564-000631	8307

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EXAMINER

SINES, BRIAN J

ART UNIT PAPER NUMBER

1743

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/054,550

Applicant(s)

GOODMAN, RODNEY M.

Examiner

Brian J. Sines

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/12/2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 35-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 35 – 50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 35 – 50 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: Regarding claims 35 and 45, it is unclear as to how the patterning and etching of the sensor well in the first conductive layer is performed without interfering with the first conducting layer. Is the first insulating layer a photoresist layer?

Claim 42 recites the limitation "third conductive layers" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 35 – 37 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Butler (U.S. Pat. No. 4,062,750). Regarding claim 35, Butler teaches a method for forming a sensor on a substrate, wherein the method, which is based upon integrated circuit thin film techniques,

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comprises the steps of: forming a first conductive layer (anode metallization layer 74) over the substrate (silicon wafer, 70); forming a first insulating layer (negative photoresist layer 76) over the first conductive layer (72); and patterning and etching a sensor well (holes or wells, 80 & 104, respectively) in the first conductive layer (74); and forming a sensor material (buffered electrolyte 120) in the sensor well, wherein the sensor material has an electrical property that changes in the presence of an analyte (see col. 16, lines 49 – 68; col.17, lines 1 – 68; col. 18, lines 1 – 68; figures 9a, 9b, 9c & 10). Regarding claim 36, Butler further teaches the step of forming a second conductive layer (86) over the first insulating layer (76) (see col. 17, lines 13 – 23; figure 9b & 9c). Regarding claim 37, Butler further teaches the step of forming a passivation layer (e.g., membrane 12, which may comprise a glass composition) over the second conductive layer of the sensor within the electrode assembly (10) (see col. 1, lines 1 – 68; col. 2, lines 60 – 68; col. 3, lines 1 – 48; col. 21, lines 9 – 30; figure 1). Regarding claim 40, Butler et al. teach that the first conductive layer (anode metallization layer 74) may comprise silver (see col. 16, lines 60 – 64).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 35 – 40 and 45 – 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (U.S. Pat. No. 5,571,401 A) in view of Butler (U.S. Pat. No. 4,062,750).

Regarding claims 35, 38, 45 and 48, Lewis et al. teach an analyte detection system having a sensor array comprising a plurality of sensor sites, wherein the sensor array comprises: a first sensor site comprising a first material having regions of a nonconductive organic polymer material, such as main-chain carbon polymers including poly(dienes), and a conductive material, such as polypyrrole, and a second sensor site comprising a second material having regions of a nonconductive organic polymer material and a conductive material, wherein an electrical property in each of the sensor sites changes in the presence of an analyte. Lewis et al. do teach that the sensor arrays are particularly well-suited to scaled-up production and may be fabricated using integrated circuit design technologies (see col. 6, lines 47 – 56). However, Lewis et al. do not teach the specific method steps of manufacturing the detection system based upon integrated circuit design technologies. Butler teaches a method for forming a sensor on a substrate, wherein the method, which is based upon integrated circuit thin film techniques well known in the art, comprises the steps of: forming a first conductive layer (anode metallization layer 74) over the substrate (silicon wafer, 70); forming a first insulating layer (negative photoresist layer 76) over the first conductive layer (72); and patterning and etching a sensor well (holes or wells, 80 & 104, respectively) in the first conductive layer (74); and forming a sensor material (buffered electrolyte 120) in the sensor well, wherein the sensor material has an electrical property that

changes in the presence of an analyte (see col. 16, lines 49 – 68; col.17, lines 1 – 68; col. 18, lines 1 – 68; figures 9a, 9b, 9c & 10). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate such a fabrication methodology, as taught by Butler, in providing for a sensor or plurality of sensors within the analyte detection system, as taught by Lewis et al., in order to facilitate the efficient manufacture of the analyte detection system. Regarding claims 36 and 46, Butler further teaches the step of forming a second conductive layer (86) over the first insulating layer (76) (see col. 17, lines 13 – 23; figure 9b & 9c). Regarding claims 37 and 47, Butler further teaches the step of forming a passivation layer (e.g., membrane 12, which may comprise a glass composition) over the second conductive layer of the sensor within the electrode assembly (10) (see col. 1, lines 1 – 68; col. 2, lines 60 – 68; col. 3, lines 1 – 48; col. 21, lines 9 – 30; figure 1). Regarding claim 39, Lewis et al. teaches that in forming the sensor material in the sensor well, fluid may be applied to the sensor well using ink-jet technology (see col. 6, lines 53 – 65). Regarding claim 40, Butler et al. teach that the first conductive layer (anode metallization layer 74) may comprise silver (see col. 16, lines 60 – 64). Regarding claim 49, Lewis et al. teach that these sensor arrays comprise a plurality of compositionally different chemical sensor sites (see col. 2, lines 57 – 65; col. 3, lines 40 – 67; col. 4, lines 1 – 65; col. 7, lines 3 – 58; col. 11, lines 15 – 34; figure 4A). Regarding claim 50, the applicant is advised that the Courts have held that the mere duplication of parts, without any new or unexpected results, is within the ambit of one of ordinary skill in the art. See In re Harza, 124 USPQ 378 (CCPA 1960). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate a subset of sensor wells within the sensor array having the same composition of sensor material in

order to provide, for example, statistically reliable sensor response results from sensors having the same composition of sensor material.

Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. in view of Butler as applied to claims 35 – 40 and 45 – 50 above, and further in view of Minch et al. (U.S. Pat. No. 5,986,927 A). Lewis et al. teach that each of the sensor sites provides an output signal that indicates changes to an electrical property, such as an electrical resistance, in the presence of an analyte (see col. 7, lines 23 – 58). Lewis et al. do teach that the sensors or chemiresistors can be integrated into the front end of a simple amplifier interfaced to an A/D converter to efficiently feed the data stream directly into a neural network software or analysis section (see col. 6, lines 47 – 56). Lewis et al. are silent to the specific teaching of the incorporation of autozeroing amplifiers, which are coupled to receive the output signals of each of the sensor sites, wherein the autozeroing amplifiers adapt out low frequency components of the sensor output signals. Minch et al. do teach an autozeroing floating-gate amplifier, which is an integrated continuous-time filter that is intrinsically autozeroing (see col. 5, lines 45 – 66). Minch et al. teach the use of the autozeroing floating-gate amplifier with a variety of types of sensors (see col. 24, lines 25 – 55). Minch et al. teach that the long-term drift in the baseline resistance of the sensor is adapted out by the circuits autozeroing behavior (see col. 24, lines 55 – 64). Minch et al. teach that these autozeroing floating-gate amplifier devices are particularly well suited to smell-sensing and chemical sensing devices since many of these sensing devices are based upon variable sensor resistance and experience drift over time (see col. 24, lines 64 – 67). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the

autozeroing floating-gate amplifier, as taught by Minch et al., with the detection system, as taught by Lewis et al. in view of Butler, in order to provide a detection system with stable performance by eliminating or mitigating the occurrence of sensor signal drift.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines, Ph.D. whose telephone number is (703) 305-0401. The examiner can normally be reached on Monday - Friday (11:30 AM - 8 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Jill Warden
Supervisory Patent Examiner
Technology Center 1700